What is Claimed:

1. A method for determining a user's Respiratory Quotient (RQ), comprising the steps of:

measuring the user's real-time inspired O_2 concentration (INS O2) and end tidal O_2 concentration (ETO2);

measuring the user's real-time inspired CO_2 concentration (INS CO2) and end tidal CO_2 concentration (ETCO2); and

determining the user's RQ from the measured INS O2, ETO2, INS CO2, and ETCO2 values in accordance with the following equation:

$$RQ = (ETCO2 - INS\ CO2) / (INS\ O2 - ETO2).$$

2. The method of claim 1, wherein the measurement steps are performed while the user is in a resting condition.

3. The method of claim 2, wherein ETCO2 is measured as the maximum CO_2 value in a breath cycle of the user.

4. The method of claim 2, wherein INS CO2 is measured as the minimum CO_2 value in a breath cycle of the user.

5. The method of claim 2, wherein ETO2 is measured as the minimum O_2 value within a breath cycle of the user.

6. The method of claim 2, wherein INS O2 is measured as the maximum O_2 value within a breath cycle of the user.

7. The method of claim 2, wherein values of INS CO2 and ETCO2 are determined by analysis of a CO_2 waveform of a breath cycle of the user.

8. The method of claim 7, wherein values of INS O2 and ETO2 are determined by synchronizing timing of an O_2 waveform of a breath cycle of the user with the CO_2 waveform and sampling INS O2 and ETO2 values simultaneously with sampling of complementary CO_2 values determined by maximum and minimum value analysis of the CO_2 waveform.

9. The method of claim 2, wherein the steps of measuring ETO2 and ETCO2 comprises the step of measuring ETO2 and ETCO2 in an exhaled breath of a patient, whereby the breath has been held for approximately 5-10 seconds prior to exhalation.

10. A device for determining a user's resting Respiratory Quotient (RQ), comprising:
a CO_2 sensor that measures the user's real-time inspired CO_2 concentration (INS CO2) and end tidal CO_2 concentration (ETCO2);
an oxygen sensor that measures the user's real-time inspired O_2 concentration (INS O2) and end tidal O_2 concentration (ETO2); and
a processor that determines the user's RQ from the measured INS O2, ETO2, INS CO2, and ETCO2 values in accordance with the following equation:

$$RQ = (ETCO2 - INS\ CO2) / (INS\ O2 - ETO2).$$

11. The device of claim 9, further comprising a facemask connected to a breathing adapter and adapted to sample the user's inspired and expired respiratory gases.

12. The device of claim 10, wherein the CO_2 sensor and oxygen sensor are disposed on the breathing adapter in a mainstream system configuration.

13. The device of claim 10, further comprising a tube that carries gas samples from the facemask to the CO_2 sensor and the oxygen sensor configured in a sidestream system configuration.

14. A device for determining a user's resting Respiratory Quotient (RQ), comprising:
a facemask adapted to received gases inspired by a user and gases exhaled by the user;
a CO_2 sensor that measures the user's real-time inspired CO_2 concentration (INS CO2) and end tidal CO_2 concentration (ETCO2);
an oxygen sensor that measures the user's real-time inspired O_2 concentration (INS O2) and end tidal O_2 concentration (ETO2);
a processor that determines the user's RQ from the measured INS O2, ETO2, INS CO2, and ETCO2 values in accordance with the following equation:

$$RQ = (ETCO2 - INS\ CO2) / (INS\ O2 - ETO2);$$ and

an airway tube connected to the facemask so as to direct exhaled gases to said CO_2 sensor and said oxygen sensor for measurement.